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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of

Jong Dae PARK et al.

Group Art Unit: 2839

Serial No.: 09/585,441

Examiner: C. Prasad

Filed: June 2, 2000

WIRE CONNECTING DEVICE

Honorable Commissioner for Patents
Washington, D.C.

APPEAL BRIEF

Sir:

In response to a Final Rejection of all pending claims that was mailed on February 22, 2001, and to a subsequent Advisory Action dated April 3, 2001, and in support of a "Notice of Appeal" filed on May 22, 2001, Applicant hereby submits this Appeal Brief.

Real Party in Interest

The real party of interest is LG. Philips LCD Co. Ltd., a South Korean Corporation.

Related Appeals and Interferences

There are no related appeals or interferences known to the undersigned attorney.

Status of Claims

Claims 1-31 were filed. Claims 1-4 and 6-17 are canceled. Claims 5 and 18-31 are pending and stand rejected. The rejections of claims 5 and 18-31 are appealed.

Status of Amendments

The Applicant submitted an "Amendment After Final" on March 22, 2001. In response, the Examiner mailed an Advisory Action on April 3, 2001 that indicated that the Amendment After Final "does NOT place the application in condition for allowance." However, the Examiner indicated that the "proposed amendment(s) will be entered upon the timely submission of a Notice of Appeal and Appeal Brief with requisite fees."

Therefore, in view of a Notice of Appeal mailed on May 22, 2001, and in view of this Appeal Brief, Applicant submits that the March 22, 2001 "Amendment After Final" should be entered.

Summary of Invention

The subject invention relates to a device for connecting wires to electrodes of a lamp such as the type used in liquid crystal displays. See, for example, the "Field of the Invention:" -- -- -- Such lamps are important in liquid crystal displays (LCD), for example, because an LCD produces a desired image by controlling the transmissivity of light from a lamp using liquid crystal cells. See, for example, page 1, lines 10-12. Referring now to Figure 2, an LCD usually includes a back light unit having a lamp 2 and a lamp housing 10. See, for example, page 2, lines 1-8.

Referring now to Figures 1-7, the lamp 2 includes electrodes 8 connected to wires 16 that supply power. See, for example, page 2, lines 8-12. The lamp electrodes 8 and the wires 16 are electrically connected together. In the prior art, the connection is usually by soldering, see page 2, lines 13-15. In the subject invention, the lamp electrodes 8 and the wires 16 are electrically connected together by a connecting device.

Referring now to Figure 6, the invention comprises a device for connecting an electrode 8 to a wire 4 having an exterior sheath and a conductive core 16. The device includes a first clamping part 24C for pressing and securing the wire 4, a second clamping part 24B for pressing and securing the conductive core 16 of the wire 4, and a third clamping part 24 for pressing and securing the electrode. The third clamping part 24 includes a snap-fit portion 24A that is perpendicular to the first and second clamping parts. Supporting text for Figure 6 is provided, for example, on page 6 of the subject specification.

Referring now to Figure 5, the invention comprises a device for connecting an electrode 8 from a lamp 2 to a wire 4 having a conductive core 16. The device includes an elongated first body part 22 comprised of a flexible, conductive material. The first body part 22 includes two pairs of arms (22B and 22C). Furthermore, the device includes an elongated second body part 22A that integrally connects to the elongated first body part 22 at an angle. The elongated second body part 22A, which is also comprised of the flexible, conductive material, includes snap-fit arms (shown at the sides) that are dimensioned to receive and clamp said lamp 2. The first pair of said arms 22C is positioned to meet the wire 4 such that the first pair of arms 22C can bend to clinch the wire. The second pair of arms 22B is positioned to meet the conductive core 16. The second pair of arms 22B is bendable to clinch the conductive core. Supporting text for Figure 5 is provided, for example, on pages 5 and 6 of the subject specification.

The angle between the elongated first and second body parts 22 and 22A is preferably 90°. The flexible, conductive material can be crimped and/or soldered. The first pair of arms 22C can clinch the wire 4 such that solder is prevented from flowing up the wire.

Figure 6 further describes a device for connecting an electrode 8 from a lamp 2 to a wire 4 having a conductive core 16. The device includes an elongated first body part 24 comprised of a flexible, conductive material. The first body part 24 includes two pairs of arms (24B and 24C). Furthermore, the device includes an elongated second body part, associated with the clamping part 24A, that integrally connects to the elongated first body part 24 at an angle. The elongated second body part, which is also comprised of the flexible, conductive material, includes snap-fit portions 24A dimensioned to receive and clamp the electrode 8. The first pair of arms 24C is positioned to meet the wire 4 such that the first pair of arms can bend to clinch the wire. The second pair of arms 24B is positioned to meet the conductive core 16. The second pair of arms is bendable to clinch the conductive core. Supporting text for Figure 6 is provided, for example, on page 6 of the subject specification.

The angle between the elongated first and second body parts 24 and 24A is preferably 90°. The flexible, conductive material can be crimped and/or soldered. The first pair of arms 24C can clinch the wire 4 such that solder is prevented from flowing up the wire.

Referring now to Figure 7, the invention comprises a device for connecting an electrode 8 from a lamp 2 to a wire 4 having a conductive core 16. The device includes an elongated body part 26 that is comprised of a flexible, conductive material. The elongated body part 26 includes two pairs of arms (26A and 26B), and an opening 26C near an end of the elongated body part 26. The first pair of arms 26B is positioned to meet the wire 4 and is bendable to clinch the wire. The second pair of arms is positioned to meet the conductive core 16 and is bendable to clinch the conductive core 16. The opening 26C is dimensioned to receive the electrode 8. Supporting text for Figure 7, for example, begins on line 21 of page 7 and continues through page 8 of the subject specification.

The flexible, conductive material can be crimped and/or soldered. The first pair of arms 26B can clinch the wire 4 sufficiently hard that solder is prevented from flowing up the wire.

Issues

The first issue on appeal is whether the drawings are in accord with 37 C.F.R. §1.83(a), and thus show every feature specified in the claims. In particular, with regards to claims 18-31, whether an elongated first body (part) and an elongated second body (part) are shown. Applicant notes that the Examiner objected to the drawings, which is discussed in relation to the 35 U.S.C. §112, first paragraph rejection, discussed below.

The second issue on appeal is whether claims 18-31 meet the requirements of 35 U.S.C. §112, first paragraph, in that recited features of the claims, in particular an elongated first body (part), an elongated second body (part), arms, and snap-fit arms, are supported by the specification.

The third issue on appeal is whether claims 5 and 18-31 are allowable under 35 U.S.C. §103(a). In particular, whether claims 5, 23-25, and 28-29 are allowable over Schmitt, Jr. in view of Maejima; whether claims 18-20 are allowable over Schmitt, Jr. and Maejima, in view of Applicant's admitted prior art; whether claims 21 and 22 are allowable over Schmitt, Jr., Maejima, and Applicant's admitted prior art, in view of Murphy; and whether claims 26, 27, 30, and 31 are allowable over Schmitt, Jr. and Maejima, and further in view of Murphy.

Grouping of Claims

Applicant respectfully asserts that on the first issue (whether the drawings are in accord with 37 C.F.R. §1.83(a)), claims 18-27 stand together, and that claims 28-31 stand together.

Applicant respectfully asserts that on the second issue (whether claims 18-31 meet the requirements of 35 U.S.C. §112, first paragraph), claims 18-27 stand together, and that claims 28-31 stand together.

Applicant respectfully asserts that on the third issue (whether claims 5 and 18-31 are allowable under 35 U.S.C. §103(a)), the claims do not all stand together; claim 5 stands alone, claims 18-22 stand together, claims 23-27 stand together; and claims 28-31 stand together.

Arguments

1) Whether the drawings are in accord with 37 C.F.R. §1.83(a).

The Examiner objected to the drawings under 37 CFR 1.83(a) for not showing every feature of the invention specified in the claims. In particular, the Examiner indicated that the drawings do not show an “elongated first body” and an “elongated second body.” See, for example, the February 22, 2001 Office Action at page 2.

However, claims 18-31 do not refer to an “elongated first body” or to an “elongated second body.” Rather, claims 18-27 refer to an “elongated first body *part*” and to an “elongated second body *part*” [italics added], while claims 28-31 refer to an “elongated body.”

Regarding claims 18-27, Figures 5 and 6, for example, show an “elongated first body part” and an “elongated second body part” (see, for example, elements 22, 22A, the vertical sides of 22A, and elements 24 and 24A).

Regarding claims 28-31, Figure 7, for example, shows an elongated body 26.

Accordingly, Applicant respectfully submits that the drawings are in accord with 37 C.F.R. §1.83(a).

2) Whether claims 18-31 meet the requirements of 35 U.S.C. §112, first paragraph.

The Examiner rejected claims 18-31 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. In particular, the terms in question are “an elongated first body,” “an elongated second body,” “arms” and “snap-fit arms.” Reference the February 22, 2001 Office Action beginning at the bottom of page 2.

For clarification, claims 18-31 do not refer to an “elongated first body” or to an “elongated second body.” Rather, claims 18-27 refer to an “elongated first body *part*” and to an “elongated second body *part*” [italics added], while claims 28-31 refer to an “elongated body.”

Regarding claims 18-27, Figures 5 and 6, for example, show an “elongated first body part” (for example, elements 22 and 24), an “elongated second body part” (for example, elements 22A and 24A), “arms” (elements 22B, 22C, 24B, and 24C) and “snap fit arms” (elements 24A and the sides of element 22A). Furthermore, pages 6 (beginning on line 11) and 7 (beginning on line 9) of the specification discuss a clamp 22 (24) and a lamp clamping part 22A (24A).

The specification, beginning on line 17 of page 6, also discusses snapped parts.

Accordingly, Applicant respectfully submits that claims 18-31 are in full compliance with 35 U.S.C. §112, first paragraph.

3. Whether claims 5 and 18-31 are allowable under 35 U.S.C. §103(a).

The Examiner rejected claims 5, 23-25, and 28-29 under 35 U.S.C. 103(a) as being unpatentable over Schmitt Jr. (US 5,610,472) in view of Maejima (US 5,897,396). The Examiner also rejected claims 18-20 under 35 U.S.C. 103(a) as being unpatentable over Schmitt Jr. (US 5,610,472) and Maejima (US 5,897,396), in view of Applicant's admitted prior art; rejected claims 21 and 22 under 35 U.S.C. 103(a) as being unpatentable over Schmitt Jr. (US 5,610,472) and Maejima (US 5,897,396) and Applicant's admitted prior art, and in further view of Murphy; and rejected claims 26, 27, 30, and 31 under 35 U.S.C. 103(a) as being unpatentable over Schmitt Jr. (US 5,610,472) and Maejima (US 5,897,396), and further in view of Murphy.

A) Arguments related to the rejections of claims 5 and 18-31.

As all of the rejections are based on at least Schmitt Jr. (US 5,610,472) and Maejima (US 5,897,396), Applicants would like to address those references with regard to the rejections of all of the pending claims. The Examiner, after acknowledging that Schmitt Jr. does not show a crimping portion having a pair of arms for crimping the wire and the core, relies on Maejima for those elements. The Examiner asserts that Maejima includes arms 27 crimped to the core and arms 19 crimped on the sheath of the wires.

However, Maejima describes element 19 only as a "rubber clamping piece" (see Maejima, column 7, lines 8-10). As best understood, the rubber clamping piece 19 is used to

clamp a waterproof rubber plug 51 to make a waterproof fitting. See, for example, Maejima, column 7, lines 8-14. Thus, Maejima does not include arms crimped on the sheath of the wires as claimed in the subject invention. Therefore, the cited references, singly or in combination, do not render the subject invention obvious, and all of the pending claims are believed to be allowable. Accordingly, even if Schmitt Jr. and Maejima is combinable for argument sake, the Examiner still has not shown that combining Schmitt Jr. and Maejima arrives at the invention defined by claims 5 and 18-31.

Applicant submits that the Examiner also has not properly shown the motivation needed to combine the cited references including Schmitt Jr. and Maejima. In combining Schmitt Jr. and Maejima, the Examiner states that "It would have been obvious to one having ordinary skill in the art at the time of the instant invention to provide the pair of arms to the crimping portion 108 for crimping to the wire 30 and its core because this would secure the wire and its core to the device 92 as shown by Maejima and well known in the art of electrical connectors." See page 4 of the final Office Action dated February 22, 2001. Again, Applicant notes that the "rubber clamping piece" of Maejima is used to clamp a waterproof rubber plug 51 to make a waterproof fitting and does not include arms crimped on the sheath of the wires, as discussed above. Accordingly, Applicant submits that the motivation for combining Schmitt Jr. and Maejima comes from the present invention, which is an improper combination for an obviousness rejection.

B) Arguments specifically related to the rejections of claims 18-31.

As previously indicated, the Examiner rejected claims 18-31 under 35 U.S.C. 103(a) as being unpatentable over at least Schmitt Jr. (US 5,610,472) in view of Maejima (US

5,897,396). For similar reasons provided above in section A, claims 18-31 are allowable.

Furthermore, claims 18-27 are further allowable for reasons as follows.

With regard to claims 18-27, the subject application is patentably distinguishable over the relied upon references because the invention defined by claims 18-27 includes “an elongated second body part integrally connected to said elongated first body part at an angle, said elongated second body part comprised of said flexible, conductive material, said elongated second body part including snap-fit arms.” Please reference line 5 of claims 18 and 23.

While Schmitt Jr. appears to disclose an integral electrical terminal having a crimping portion (reference Figures 6 and 7, and column 5, lines 35-56), Schmitt Jr. does not disclose an integral electrical terminal with multiple arms, one that meets the wire (sheath) and the other that meets the wire’s conductive core. As best understood, Maejima, Murphy, and AAPA also do not disclose or suggest an integral device as defined by claims 18-31. Thus, even if for the sake of argument only that Schmitt Jr., Maejima, Murphy, and AAPA are combinable, such a combination still would not render a combination of elements including “an elongated second body part integrally connected to said elongated first body part at an angle, said elongated second body part comprised of said flexible, conductive material, said elongated second body part including snap-fit arms.” Again, Applicant submits that the proper motivation to combine the cited references as suggested by the Examiner does not exist and such combination, even if it were assumed, still does not arrive at the claimed invention. Thus, claims 18-27 are further allowable.

C) Arguments specifically related to the rejections of claims 18-22.

As previously indicated, the Examiner rejected claims 18-22 under 35 U.S.C. 103(a) as being unpatentable over at least Schmitt Jr. (US 5,610,472) in view of Maejima (US 5,897,396). For the reasons provided above in sections A and B, claims 18-22 are allowable. Furthermore, claims 18-22 are further allowable for reasons as follows.

With regard to claims 18-22, the subject application is allowable over the cited references because the invention defined by claims 18-27 includes an elongated second body part integrally connected to said elongated first body part at an angle, said elongated second body part comprised of said flexible, conductive material, said elongated second body part including snap-fit arms dimensioned to receive and clamp said lamp. The snap-fit arms, for example, may be dimensioned to receive and clamp a lamp. See, for example, lines 7 and 8 of claim 18. As best understood, none of the cited references, singly or in combination, teaches, discloses or suggests such feature of the claimed invention to receive and clamp a lamp. Moreover, without some motivation in the references to form snap-fit arms that are dimensioned to receive and clamp a lamp, an obviousness rejection is improper. Thus, claims 18-22 are allowable.

D) Arguments specifically related to the rejections of claims 28-31.

As previously indicated, the Examiner rejected claims 28-31 under 35 U.S.C. 103(a) as being unpatentable over at least Schmitt Jr. (US 5,610,472) in view of Maejima (US 5,897,396). For the reasons provided above in section A, claims 28-31 are allowable. Furthermore, claims 28-31 are further allowable for reasons as follows.


Claim 28 recites “and elongated body part...” “having two pairs of arms and an opening near an end.” See lines 4-5 of claim 28. Furthermore, claim 28 recites that “said opening is dimensioned to receive the electrode.” See lines 9-10 of claim 28.

Schmitt Jr. discloses an integral electrical terminal having a crimping portion and radial slots 104 (reference Figures 6 and 7, and column 6, lines 43-56). Not only does Schmitt Jr. not disclose an integral electrical terminal with multiple pairs of arms, one that meets the wire (sheath) and the other that meets the wire’s conductive core, but Schmitt Jr. also does not teach an opening that is dimensioned to receive an electrode. Rather, Schmitt Jr. teaches radial slots that are deformed, reference column 6, line 50. As best understood, Maejima, Murphy, and AAPA also do not disclose or suggest a device having an opening as defined in claims 28. Thus, claims 28-31 are allowable.

In view of the foregoing arguments, Applicant respectfully requests that the Board of Appeals overturn the Examiner’s rejections and allow claims 5 and 18-31.

Respectfully submitted,

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Appendix - Claims

5. A device for connecting an electrode to a wire having an exterior sheath and a conductive core, comprising:

a first clamping part for pressing and securing the wire;

a second clamping part for pressing and securing the conductive core of the wire; and

a third clamping part for pressing and securing the electrode;

wherein said third clamping part has a snap-fit portion perpendicular to the first and second clamping parts.

18. A device for connecting an electrode from a lamp to a wire having a conductive core, comprising:

an elongated first body part comprised of a flexible, conductive material, said elongated first body part having two pairs of arms; and

an elongated second body part integrally connected to said elongated first body part at an angle, said elongated second body part comprised of said flexible, conductive material, said elongated second body part including snap-fit arms dimensioned to receive and clamp said lamp;

wherein a first pair of said arms are positioned on said elongated first body part to meet the wire, wherein said first pair of said arms are bendable to clinch the wire, wherein a second pair of said arms are positioned on said elongated first body part to

meet the conductive core, and wherein said second pair of said arms are bendable to clinch the conductive core.

19. A device according to claim 18, wherein said angle is 90 degrees.

20. A device according to claim 18, wherein said flexible, conductive material can be crimped.

21. A device according to claim 18, wherein said flexible, conductive material can be soldered.

22. A device according to claim 21, wherein said first pair of said arms can clinch said wire sufficiently hard that solder is prevented from flowing up said wire.

23. A device for connecting an electrode from a lamp to a wire having a conductive core, comprising:

an elongated first body part comprised of a flexible, conductive material, said elongated first body part having two pairs of arms; and

an elongated second body part integrally connected to said elongated first body part at an angle, said elongated second body part comprised of said flexible, conductive material, said elongated second body part including snap-fit portions dimensioned to receive and clamp said electrode;

wherein a first pair of said arms are positioned on said elongated first body part to meet the wire, wherein said first pair of said arms are bendable to clinch the wire,

wherein a second pair of said arms are positioned on said elongated first body part to meet the conductive core, and wherein said second pair of said arms are bendable to clinch the conductive core.

24. A device according to claim 23, wherein said angle is 90 degrees.

25. A device according to claim 23, wherein said flexible, conductive material can be crimped.

26. A device according to claim 23, wherein said flexible, conductive material can be soldered.

27. A device according to claim 26, wherein said first pair of said arms can clinch said wire sufficiently hard that solder is prevented from flowing up said wire.

28. A device for connecting an electrode from a lamp to a wire having a conductive core, comprising:

an elongated body part comprised of a flexible, conductive material, said elongated body part having two pairs of arms and an opening near an end of said elongated body part, wherein a first pair of said arms are positioned on said elongated body part to meet the wire, wherein said first pair of said arms are bendable to clinch the wire, wherein a second pair of said arms are positioned on said elongated body part to meet the conductive core, wherein said second pair of said arms are bendable

to clinch the conductive core, and wherein said opening is dimensioned to receive the electrode.

29. A device according to claim 28, wherein said flexible, conductive material can be crimped.

30. A device according to claim 28, wherein said flexible, conductive material can be soldered.

31. A device according to claim 30, wherein said first pair of said arms can clinch said wire sufficiently hard that solder is prevented from flowing up said wire.